ELSEVIER

Volumes 300–301, 12 April 2000

Journal of ALLOYS AND COMPOUNDS

www.elsevier.com/locate/jallcom

Contents

Preface 1

Lectures

Simple way to test the validity of $^{2S+1}L_J$ barycenters of rare earth ions (e.g. $4f^2$, $4f^3$ and $4f^6$ configurations) 2
E. Antic-Fidancev (Paris, France)

Coherent light sources with powder: stimulated amplification versus super-radiance 11
F. Auzel and P. Goldner (Meudon, France)

Blue emission of Pr^{3+} ions in $LaCl_3$ crystal triggered by U^{3+} 18
P.J. Dereń (Wrocław, Poland), J.-C. Krupa (Orsay, France) and W. Stręk (Wrocław, Poland)

Auger-type excitation and de-excitation processes in rare earth and transition metal doped semiconductors 23
M. Godlewski, A.J. Zakrzewski and V.Yu. Ivanov (Warsaw, Poland)

Absence or existence of intrinsic optical bistability of coupled ion pairs in solids 32
J. Heber (Darmstadt, Germany)

Spectroscopic study of lanthanide(III) complexes with chosen aminoacids and hydroxyacids in solution 38
Z. Hnatejko, S. Lis and M. Elbanowski (Poznań, Poland)

Simulation of the spectroscopic and magnetic properties of RE(III) ions in RE oxychlorides based on exact crystal structure from Rietveld refinements 45
J. Hölsä, R.-J. Lamminmäki, M. Lastusaari (Turku, Finland), P. Porcher (Paris, France) and R. Sáez Puche (Madrid, Spain)

Improvement of emission intensity in luminescent materials based on the antenna effect 55
A.M. Kłonkowski (Gdańsk, Poland), S. Lis, Z. Hnatejko (Poznań, Poland), K. Czarnobaj (Gdańsk, Poland), M. Pietraszkiewicz (Warsaw, Poland) and M. Elbanowski (Poznań, Poland)

Excitation of Er^{3+} emission in Er, Yb codoped thin silica films 61
A. Kozanecki, B.J. Sealy and K. Homewood (Guildford, UK)

Avalanche up-conversion processes in Pr, Yb-doped materials 65
S. Kück, A. Diening, E. Heumann, E. Mix, T. Sandrock, K. Sebald and G. Huber (Hamburg, Germany)

Spectroscopy and structure of selected lanthanide polymeric and monomeric systems 71
J. Legendziewicz (Wrocław, Poland)

Applications of spectroscopic methods in studies of polyoxometalates and their complexes with lanthanide(III) ions 88
S. Lis (Poznan, Poland)

Spectroscopy and characterisation of Ce^{3+}-doped pure or mixed $Lu_x(RE^{3+})_{1-x}ALO_3$ scintillators 95
J.A. Mares (Praha, Czech Republic)

Measurement and analysis of the temperature and pressure dependence of the $^7F_0 \rightarrow {}^5D_0$ excitation spectra of Eu(III) complexes with 4-phenylethynyl-2,6-pyridine-dicarboxylic acid 101
C.L. Maupin, M.W. Logue, L. Leifer and J.P. Riehl (Houghton, MI, USA)

Lifetime and fluorescence quantum yield of uranium(VI) species in hydrolyzed solutions 107
G. Meinrath (Passau and Freiberg, Germany), S. Lis, Z. Stryla (Poznan, Poland) and C. Noubactep (Freiberg, Germany)

Rare earth coordination compounds: from monodentate ligands via crown ether complexes to a variety of bidentate ligands . . 113
G. Meyer (Köln, Germany)

Yb^{3+}–Er^{3+}-codoped $LaLiP_4O_{12}$ glass: a new eye-safe laser at 1535 nm 123
A.-F. Obaton (La Rochelle and Villeurbanne, France), C. Parent, G. Le Flem (Pessac, France), P. Thony (Grenoble, France), A. Brenier and G. Boulon (Villeurbanne, France)

Elsevier Science S.A.

Saturation effect on multiphonon relaxation rates of rare earth ions in glasses at high excitation power 131
F. Pellé and F. Auzel (Meudon, France)

Macrocyclic and macropolycyclic heteroaromatic *N*-oxides: powerful sensitizers for the lanthanide ions emission 141
M. Pietraszkiewicz, J. Karpiuk and O. Pietraszkiewicz (Kasprzaka, Poland)

Fluorescence study of zirconia films doped by Eu^{3+}, Tb^{3+} and Sm^{3+} and their comparison with silica films 147
R. Reisfeld, M. Zelner and A. Patra (Jerusalem, Israel)

Investigation of $LiXO_3$ (X=Nb, Ta) crystals doped with luminescent ions. Recent results 152
W. Ryba-Romanowski, I. Sokólska, G. Dominiak-Dzik and S. Gołąb (Wrocław, Poland)

Photoacoustic spectroscopy of YAG crystals doped with Ce 158
M. Grinberg, A. Sikorska (Gdańsk, Poland) and S. Kaczmarek (Warsaw, Poland)

Theory of host sensitized luminescence of rare earth doped materials. I. Parity considerations 165
L. Smentek (Toruń, Poland and Nashville, TN, USA) and B.A. Hess Jr. (Nashville, TN, USA)

Electronic spectroscopy of trivalent lanthanide ions in lead zinc borate glasses 174
A. Speghini (Verona, Italy), M. Peruffo, M. Casarin, D. Ajò (Padova, Italy) and M. Bettinelli (Verona, Italy)

Efficient up-conversion in $KYb_{0.8}Eu_{0.2}(WO_4)_2$ crystal 180
W. Strek, P.J. Dereń, A. Bednarkiewicz (Wrocław, Poland), Y. Kalisky and P. Boulanger (Ber Sheva, Israel)

Vibronic spectra and details of the structure of europium nitrates with derivatives of 1,10-phenanthroline 184
V. Tsaryuk, V. Zolin, L. Puntus, V. Savchenko (Moscow, Russia), J. Legendziewicz, J. Sokolnicki and R. Szostak (Wrocław, Poland)

Spectroscopic properties of $SrZnCl_4:M^{2+}$ and $BaZnCl_4:M^{2+}$ (M=Eu, Sm, Tm) 193
C. Wickleder (Köln, Germany)

Radiative recombination in Ce-, Pr-, and Tb-doped barium fluoride 199
A.J. Wojtowicz, P. Szupryczynski (Torun, Poland and Boston, MA, USA) and W. Drozdowski (Torun, Poland)

Luminescence characteristics of Er-doped GaN semiconductor thin films 207
J.M. Zavada (London, UK), M. Thaik, U. Hömmerich (Hampton, VA, USA), J.D. MacKenzie, C.R. Abernathy, S.J. Pearton (Gainesville, FL, USA) and R.G. Wilson (Stevenson Ranch, CA, USA)

The nature of plaser-powdered laser 214
V.F. Zolin (Moscow, Russia)

Contributed papers

Excited state absorption processes in Sm^{3+} doped GdOCl 218
S. Areva, J. Hölsä, R.-J. Lamminmäki, H. Rahiala (Turku, Finland), P. Dereń and W. Stręk (Wrocław, Poland)

Rare earth doped sol–gel materials as potential absorbance standards 224
S. Aubonnet and C.C. Perry (Nottingham, UK)

Spectroscopic studies of samarium doped CdF_2 crystal 230
L. Bryja, R. Kudrawiec, J. Misiewicz, W. Strek, P. Deren and A. Bednarkiewicz (Wrocław, Poland)

Extraction studies on the formation of La(III), Gd(III) and Lu(III) species with 5,7-dihalogeno derivatives of 8-hydroxyquinoline 234
D. Czakis-Sulikowska, N. Pustelnik, B. Kuźnik and A. Malinowska (Łódź, Poland)

Influence of Yb concentration on Yb:KYW laser properties 238
A.A. Demidovich, A.N. Kuzmin, G.I. Ryabtsev (Minsk, Belarus), M.B. Danailov (Sincrotrone-Trieste, Italy), W. Strek (Wrocław, Poland) and A.N. Titov (St. Petersburg, Russia)

Simple overlap model and crystal field analysis of $Cs_2ZnCl_4:Co^{2+}$. Correlation with optical and magnetic properties 242
J. Derouet, L. Beaury, P. Porcher (Paris, France) and P.J. Deren (Wrocław, Poland)

Preliminary report on growth, structure and optical properties of $K_5LaLi_2F_{10}:Ln^{3+}$ (Ln^{3+}–Pr^{3+}, Nd^{3+}, Er^{3+}) crystals 254
G. Dominiak-Dzik, I. Sokólska, S. Gołąb and M. Bałuka (Wrocław, Poland)

Radiative recombination in BaF_2:Pr 261
W. Drozdowski and A.J. Wojtowicz (Toruń, Poland)

Laser-induced luminescence of rare-earth elements in natural zircon 267
M. Gaft (Tel-Aviv, Israel), G. Panczer (Villeurbanne, France), R. Reisfeld (Jerusalem, Israel) and I. Shinno (Fukuoka, Japan)

Spectroscopy and structure of Eu(III) complex with *N*-methylglycine 275
P.P. Gawryszewska, L. Jerzykiewicz, P. Sobota and J. Legendziewicz (Wrocław, Poland)

Investigations of the spectral properties of lanthanide(III) complexes with 3,3′-bi-isoquinoline-2,2′-dioxide ($biqO_2$) and a $biqO_2$-cryptate in solution, solids, and gels 283
P.P. Gawryszewska (Wrocław, Poland), M. Pietraszkiewicz (Warszawa, Poland), J.P. Riehl (Houghton, MI, USA) and J. Legendziewicz (Wrocław, Poland)

Thermoluminescence and scintillation properties of LuAP and YAP 289
J. Glodo and A.J. Wojtowicz (Torun, Poland and Boston, MA, USA)

Synthesis and emission spectra of $Ba_4In_{1.98}Nd_{0.02}O_7$ and $Ba_4In_{1.98}Er_{0.02}O_7$ 295
S. Gołąb, A. Zygmunt and W. Ryba-Romanowski (Wrocław, Poland)

Stimulated Raman scattering in Nd:KGW laser with diode pumping 300
A.S. Grabtchikov, A.N. Kuzmin, V.A. Lisinetskii, G.I. Ryabtsev, V.A. Orlovich and A.A. Demidovich (Minsk, Byelorussia)

Spectroscopic and magnetic studies of polynuclear Nd and heteronuclear Nd:Cu squarates 303
E. Huskowska and J. Legendziewicz (Wrocław, Poland)

Electron spin resonance and optical measurements of yttrium ortho-vanadate, doped with Nd^{3+} ions 310
R. Jablonski, S.M. Kaczmarek, M. Swirkowicz and T. Lukasiewicz (Warsaw, Poland)

ESR and X-ray diffraction measurements of Nd substituted yttrium aluminum garnet films 316
R. Jabłonski, J. Sarnecki, K. Mazur, J. Sass and J. Skwarcz (Warsaw, Poland)

Growth and characterization of lithium tantalate single crystals doped with Ho, Tm, Nd, Yb, Pr and doped by diffusion with Cr and Cu 322
S.M. Kaczmarek, M. Świrkowicz, R. Jabłoński, T. Łukasiewicz and M. Kwaśny (Warsaw, Poland)

Absorption spectrum analysis of uranium(III) formate 329
M. Karbowiak and J. Drożdżyński (Wrocław, Poland)

Investigation of the optical and ultrasonic properties of praseodymium and cerium chlorides in nonaqueous solutions 334
B. Keller, J. Legendziewicz, J. Gliński and S. Samela (Wrocław, Poland)

Nd^{3+}-, Er^{3+}- and Pr^{3+}-doped fluoride glasses for laser applications 341
M. Kwaśny, Z. Mierczyk, R. Stępień and K. Jędrzejewski (Warsaw, Poland)

Mixed valency of the rare earth and actinium ions in solid states 348
N.A. Kulagin (Kharkov, Ukraine)

Heteronuclear Eu:Cu trichloroacetate and its polynuclear Eu analogue; their spectroscopy and magnetism 353
J. Legendziewicz and M. Borzechowska (Wrocław, Poland)

Synthesis and spectroscopic characteristics of a new class of lanthanide compounds of formulae $Ln(HX)_3(NO_3)_3$ and $Ln(HX)_3Cl_3$ 360
J. Legendziewicz, G. Oczko (Wrocław, Poland), V. Amirkhanov (Kiev, Ukraine), R. Wiglusz (Wrocław, Poland) and V.A. Ovchynnikov (Kiev, Ukraine)

Spectroscopic studies of Eu(III) and Nd(III) complexes with several polyoxometalates 370
S. Lis and S. But (Poznań, Poland)

Emission and absorption properties of the eight-coordinate $[Pr(C_7H_9NO)_8](ClO_4)_3$ complex with 3,4-lutidine *N*-oxide 377
L. Macalik, J. Hanuza, K. Hermanowicz, W. Oganowski and H. Ban-Oganowska (Wrocław, Poland)

Synthesis, chemical characterisation and spectroscopic studies of the six-coordinate 3-halo-2,6-lutidine *N*-oxide complex $[PrCl_3(H_2O)(BrC_7H_8NO)_2]H_2O$ — a new Pr(III) compound 383
L. Macalik, J. Hanuza, K. Hermanowicz, W. Oganowski and H. Ban-Oganowska (Wrocław, Poland)

Optical transitions of Ho^{3+} in YAG 389
M. Malinowski, Z. Frukacz, M. Szuflińska, A. Wnuk and M. Kaczkan (Warsaw, Poland)

Colour centers in doped $Gd_3Ga_5O_{12}$ and $Y_3Al_5O_{12}$ laser crystals 395
A. Matkovskii (Rzeszow, Poland and Lviv, Ukraine), D. Sugak, S. Melnyk (Lviv, Ukraine), P. Potera (Rzeszow, Poland), A. Suchocki and Z. Frukacz (Warsaw, Poland)

Er^{3+} and Yb^{3+} doped active media for 'eye safe' laser systems 398
Z. Mierczyk, M. Kwaśny, K. Kopczyński, A. Gietka, T. Łukasiewicz, Z. Frukacz, J. Kisielewski, R. Stępień and K. Jędrzejewski (Warsaw, Poland)

Crystal field analysis of Er^{3+}-doped glasses: germanate, silicate and ZBLAN 407
M. Mortier, Y.D. Huang and F. Auzel (Meudon, France)

Spectroscopic properties of neodymium monochloroacetate single crystal as an example of complex containing Nd(III) in three different symmetry sites 414
G. Oczko (Wrocław, Poland)

Downconversion: a new route to visible quantum cutting 421
K.D. Oskam, R.T. Wegh, H. Donker, E.V.D. van Loef and A. Meijerink (Utrecht, The Netherlands)

Charge transfer luminescence of Yb^{3+} in orthophosphates 426
L. van Pieterson and A. Meijerink (Utrecht, The Netherlands)

Energy transfer processes in Pr^{3+}: $Be_2La_2O_5$ crystals 430
R. Piramidowicz, M. Kowalska and M. Malinowski (Warsaw, Poland)

Rare earth macrocyclic complexes derived from spermine 435
W. Radecka-Paryzek and H. Litkowska (Poznan, Poland)

Spectroscopic investigation of Tb(III) porphyrin in solid and solutions 439
S. Radzki (Lublin, Poland), J. Legendziewicz, J. Sokolnicki and R. Wiglusz (Wrocław, Poland)

Cooperative luminescence as a probe of clustering in Yb^{3+} doped glasses 443
B. Schaudel (Meudon and Avon, France), P. Goldner (Meudon, France), M. Prassas (Avon, France) and F. Auzel (Meudon, France)

Investigation of Er, Er:Yb and Er:Tm systems in silica sol–gels 450
J. Sokolnicki, B. Urbański and J. Legendziewicz (Wrocław, Poland)

Emission properties of nanostructured Eu^{3+} doped zinc aluminate spinels 456
W. Strek, P. Dereń, A. Bednarkiewicz, M. Zawadzki and J. Wrzyszcz (Wrocław, Poland)

Optical properties of Nd^{3+}-doped silica fibers obtained by sol-gel method 459
W. Strek, E. Pawlik (Wrocław, Poland), P. Dereń, A. Bednarkiewicz (Lublin, Poland), J. Wojcik (Gomel, Belarus), V.E. Gaishun (Minsk, Belarus) and G.I. Malashkevich (Wrocław, Poland and Minsk, Belarus)

Optical spectroscopy of the adducts of europium tris(dipivaloylmethanate) with derivatives of 1,10-phenanthroline 464
V. Tsaryuk (Moscow, Russia), J. Legendziewicz (Wrocław, Poland), L. Puntus, V. Zolin (Moscow, Russia) and J. Sokolnicki (Wrocław, Poland)

Structure peculiarities of the $La_{1-x}Nd_xGaO_3$ solid solutions 471
L. Vasylechko (Lviv, Ukraine), M. Berkowski (Warsaw, Poland), A. Matkovskii (Lviv, Ukraine and Rzeszów, Poland), W. Piekarczyk (Warsaw, Poland) and D. Savytskii (Lviv, Ukraine)

Crystal structure and optical spectroscopy of $CaGdAlO_4$:Er single crystal 475
L. Vasylechko (Lviv, Ukraine), N. Kodama (Akita, Japan), A. Matkovskii (Lviv, Ukraine and Rzeszow, Poland) and Ya. Zhydachevskii (Lviv, Ukraine)

Band structure and excitons in $CsCdBr_3$ 479
M. Wenzel, M. Altwein, R. Demirbilek, B. Leu, J. Heber, J. Kübler (Darmstadt, Germany), B. Bleeker and A. Meijerink (Utrecht, The Netherlands)

VUV excited emission pulse shapes of $LuAlO_3$:Ce 483
D. Wisniewski (Torun, Poland)

Optical properties of europium compounds of the formulae: $Eu(NCS)_3 \cdot 2[N_4(CH_2)_6] \cdot 8H_2O$ and $Eu(NO_3)_3 \cdot 2[N_4(CH_2)_6] \cdot 10H_2O$ 488
M. Zalewicz (Lódź, Poland), G. Oczko and J. Legendziewicz (Wrocław, Poland)

Temperature dependence of Ce-emission kinetics in YAG:Ce optical ceramic 495
E. Zych (Wrocław, Poland and Boston, MA, USA) and C. Brecher (Boston, MA, USA)

Author Index of Volume 300–301 501

Subject Index of Volumes 300–301 503

Keyword list